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09/460,638	12/14/1999	KENNETH G. FLUGAUR	0325.00324	2751

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EXAMINER	
ZERVIGON, RUDY	

ART UNIT	PAPER NUMBER
1763	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/460,638	FLUGAUR ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-10, 12-17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster et al (USPat. 5,665,640) in view of Ishikawa et al (USPat. 6,143,078). Foster teaches A device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) comprising: a one-piece outer portion (item 271; Figure 2B; col. 18 lines 33-59) configured for insertion into an aperture[1] ("within cylinder 238"; col. 18, line 53) through a wall (232; Figure 4B) of a plasma processing chamber (item 40; Figure 2), said one-piece outer portion (item 271; Figure 2B; col. 18 lines 33-59) consisting an electrically insulative material (271; "ceramic insulator"; col. 18 lines 42-43) and having dimensions effective to prevent or inhibit plasma (col. 18, lines 33-58) arcing (col. 18 lines 50-58) to an electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55) of said wall (232; Figure 4B) of said plasma processing chamber (item 40; Figure 2) exposed by said aperture ("within cylinder 238"; col. 18, line 53) through said wall (232; Figure 4B) of said plasma processing chamber (item 40; Figure 2) said one-piece outer portion (item 271; Figure 2B; col. 18 lines 33-59) further comprising – claim 1

Foster further teaches:

i. a lower section (portion 270/271/256; Figure 2B) having a shape approximate said aperture ("within cylinder 238"; col. 18, line 53) to fit into said aperture ("within cylinder

238"; col. 18, line 53); and (iii) an inner opening (item 256;Fig.2B; col. 18, lines 33-58) communicating through the electrically insulative material (271; "ceramic insulator"; col. 18 lines 42-43) between a bottom and a top of the outer portion (271) – claim 1

ii. A plasma processing chamber (item 40; Figure 2) having: at least one aperture ("within cylinder 238"; col. 18, line 53) therein, the at least one aperture ("within cylinder 238"; col. 18, line 53) having an exposed electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55), and the device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) of Claim 1, inserted into the aperture ("within cylinder 238"; col. 18, line 53), as claimed by claim 2

iii. A method of making a plasma processing chamber (item 40; Figure 2), the chamber (item 40; Figure 2) having at least one aperture ("within cylinder 238"; col. 18, line 53) therein, the at least one aperture ("within cylinder 238"; col. 18, line 53) having an exposed electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55), the method comprising inserting (screws holding plates 272,239; Fig. 2B) the device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) of Claim 1 into the aperture ("within cylinder 238"; col. 18, line 53), as claimed by claim 3

iv. A plasma processing chamber (item 40; Figure 2) having: a wall (232; Figure 4B); at least one aperture ("within cylinder 238"; col. 18, line 53) through said wall (232; Figure 4B), the at least one aperture ("within cylinder 238"; col. 18, line 53) having wall (232;

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[1] The Examiner agrees with Applicant's dictionary definition of "aperture" (Page 14, 1st paragraph of 2/13/6 reply),

Figure 4B), and an exposed electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55) of said wall (232; Figure 4B), and a one-piece sleeve (271; Figure 2B) configured for insertion into the aperture ("within cylinder 238"; col. 18, line 53), the one-piece sleeve (271; Figure 2B) consisting of an electrically insulative material (271; "ceramic insulator"; col. 18 lines 42-43) and having: dimensions effective to prevent inhibit plasma (col. 18, lines 33-58) arcing (col. 18 lines 50-58) to the exposed electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55) of the wall (232; Figure 4B) – claim 5

v. a lower section (portion 270/271/256; Figure 2B) having a shape approximate said aperture ("within cylinder 238"; col. 18, line 53) to fit into said aperture ("within cylinder 238"; col. 18, line 53); and an inner opening (item 256;Fig.2B; col. 18, lines 33-58) communicating through the electrically insulative material (271; "ceramic insulator"; col. 18 lines 42-43) from a bottom to a top of the one-piece sleeve (271; Figure 2B) – claim 5

vi. A method of making a plasma processing chamber (item 40; Figure 2) having a wall (232; Figure 4B), the method comprising: forming at least one aperture ("within cylinder 238"; col. 18, line 53) through said wall (232; Figure 4B), the at least one aperture ("within cylinder 238"; col. 18, line 53) having an exposed electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55) of said wall (232; Figure 4B); and (B) inserting a one-piece sleeve (271; Figure 2B) into the aperture ("within cylinder 238"; col. 18, line 53), the one-piece sleeve (271; Figure 2B) consisting of an electrically insulative material (271; "ceramic insulator"; col. 18 lines

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in this action and throughout the prosecution history.

42-43) and having: dimensions effective to prevent or inhibit the exposed electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55) of the plasma (col. 18, lines 33-58) arcing (col. 18 lines 50-58) to wall (232; Figure 4B) – claim 6

vii. a lower section (portion 270/271/256; Figure 2B) having a shape approximate said aperture ("within cylinder 238"; col. 18, line 53) to fit into said aperture ("within cylinder 238"; col. 18, line 53); and (iv) an inner opening (item 256;Fig.2B; col. 18, lines 33-58) communicating through the electrically insulative material (271; "ceramic insulator"; col. 18 lines 42-43) between a bottom and a top of the one-piece sleeve (271; Figure 2B) – claim 6

viii. A method of processing a workpiece (228; Figure 2B; 48; Figure 2), comprising: (A) exposing the chamber (item 40; Figure 2) having (1) a wall (232; Figure 4B), (2) aperture ("within cylinder 238"; col. 18, line 53) having an exposed electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55) of said wall (232; Figure 4B), and a one-piece sleeve (271; Figure 2B) inserted into the aperture ("within cylinder 238"; col. 18, line 53), the one-piece sleeve (271; Figure 2B) consisting of an electrically insulative material (271; "ceramic insulator"; col. 18 lines 42-43) and having: dimensions effective to prevent or inhibit plasma (col. 18, lines 33-58) arcing (col. 18 lines 50-58) to the exposed electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55) of the wall (232; Figure 4B), (iii) a lower section (portion 270/271/256; Figure 2B) having a shape approximate a width (diameter) of said aperture ("within cylinder 238"; col. 18, line 53)

to into said aperture ("within cylinder 238"; col. 18, line 53); and an inner opening (item 256;Fig.2B; col. 18, lines 33-58) communicating through the electrically insulative material (271; "ceramic insulator"; col. 18 lines 42-43) between a bottom and a top of the one-piece sleeve (271; Figure 2B) – claim 8

ix. A method of operating a plasma processing chamber (item 40; Figure 2), wherein the chamber (item 40; Figure 2) has at least one aperture ("within cylinder 238"; col. 18, line 53) therein and the aperture ("within cylinder 238"; col. 18, line 53) has an exposed electrically conductive surface (232; Figure 2B - "metal housing 42"; column 17, lines 20-21, lines 50-55), the method comprising the steps of: (A) initiating a plasma in the chamber (item 40; Figure 2), the aperture ("within cylinder 238"; col. 18, line 53) having the device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) of Claim 1 therein, then (B) cleaning (col.30; line 14) the chamber (item 40; Figure 2) and the device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59), as claimed by claim 9

x. The method of Claim wherein said plasma exists in said chamber (item 40; Figure 2) for a predetermined period of time (col. 3, lines 1-7), as claimed by claim 10

xi. The device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) according to claim 1 wherein an outer surface (vertical surface) of said device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) forms an angle with reference to the bottom (horizontal surface) of said device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59), as claimed by claim 16

xii. The device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) according to claim 1, wherein the electrically insulative material (271; "ceramic insulator"; col. 18 lines 42-43) is selected from the group consisting of ceramics, multi-crystal ceramics, polyvinyl polymers, polytetrafluoroethylene, polyethylene, polypropylene, polyimides, polycarbonates and single crystal insulative minerals, as claimed by claim 20

Foster does not teach:

i. said one-piece outer portion (item 271; Figure 2B; col. 18 lines 33-59) further comprising a flange section configured to remain outside of said aperture ("within cylinder 238"; col. 18, line 53) through said wall (232; Figure 4B) of said plasma processing chamber (item 40; Figure 2) wall (232; Figure 4B) – claim 1

ii. A method of processing a workpiece (228; Figure 2B; 48; Figure 2), comprising the following steps: (A) exposing the workpiece (228; Figure 2B; 48; Figure 2) to a plasma in the plasma processing chamber (item 40; Figure 2) of Claim 2 and (B) transmitting a signal ("RF"; col. 18, line 54) through the device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) out from the plasma processing chamber (item 40; Figure 2), as claimed by claim 4 – The Examiner believes that the directionality (into or out of Foster's chamber) of Foster's signal is a claim requirement of intended use. The Examiner believes Foster's apparatus is inherently capable of performing the intended use. It is well established that apparatus claims must be structurally distinguished from the prior art (In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ."(emphasis in

original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), MPEP – 2114). Further, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Exparte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Further, Product and apparatus claims — When the structure recited in the references is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent. MPEP 2112.01

iii. a flange section configured to remain outside of said aperture ("within cylinder 238"; col. 18, line 53) – claim 5, 6, 8

iv. The method of Claim 6, further comprising, prior to inserting said one-piece sleeve (271; Figure 2B), the step of forming said bottom of said one-piece sleeve (271; Figure 2B) to a plane having a non-orthogonal angle relative to said inner opening (item 256;Fig.2B; col. 18, lines 33-58), as claimed by claim 7

v. transmitting a signal ("RF"; col. 18, line 54) through the one-piece sleeve (271; Figure 2B) out from the chamber (item 40; Figure 2) – claim 8. See above argument for claim 4

vi. The device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) according to claim 1, wherein said flange section has a width (diameter) that is greater than a corresponding width (diameter) of said aperture ("within cylinder 238"; col. 18, line 53), as claimed by claim 12

vii. The device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) according to claim 12 wherein said device (item 58; Figure 2;

col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) applies a predetermined amount of pressure against an inner wall (232; Figure 4B) of said aperture ("within cylinder 238"; col. 18, line 53), as claimed by claim 13

viii. The device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) according to claim 12, wherein said lower section (portion 270/271/256; Figure 2B) has a first length and said flange section has a second length, as claimed by claim 14

ix. The device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) according to claim 14, wherein said first length is greater than a length of said aperture ("within cylinder 238"; col. 18, line 53), as claimed by claim 15

x. The device (item 58; Figure 2; col. 18 lines 33-59; items 270-272 and conduit 256; Figure 2B; col. 18, lines 33-59) according to claim 16, wherein said angle is non-orthogonal, as claimed by claim 17

Ishikawa teaches a similar device (302; Figure 5) used to deliver process gas to a treatment chamber (column 9, lines 45-64). Specifically, Ishikawa teaches a one-piece sleeve (outer surface of 302) with a flange section (302/314 interface) configured to remain outside the aperture.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to construct Foster's one-piece sleeve to include a flange section configured to remain outside the aperture as taught by Ishikawa and to optimize the dimensions of the flange section, the lower section, and the bottom planar angle of Foster's one-piece sleeve.

Motivation to construct Foster's one-piece sleeve to include a flange section configured to remain outside the aperture as taught by Ishikawa and to optimize the dimensions of the flange section, the lower section, and the bottom planar angle of Foster's one-piece sleeve is to enhance hermeticity of the process chamber as taught by Ishikawa (column 10, lines 20-28). Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04).

3. Claims 11, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster et al (USPat. 5,665,640) and Ishikawa et al (USPat. 6,143,078) in view of Bernard J. Curtis (USPat. 4,328,068). Foster and Ishikawa are discussed above. Foster and Ishikawa do not teach a physical signal ("RF"; col. 18, line 54) from the device of claim 1 consisting of a spectroscopic endpoint detection signal or a channel therefore.

Bernard J. Curtis teaches a spectroscopic endpoint detection signal and a channel therefore (34,36,32; Figure 3; column 2, lines 59-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace Foster and Ishikawa's RF physical signal as discussed above with Bernard J. Curtis's spectroscopic endpoint detection signal.

Motivation to replace Foster and Ishikawa's RF physical signal as discussed above with Bernard J. Curtis's spectroscopic endpoint detection signal is for determining the end point of the plasma etching process as discussed by Bernard J. Curtis (column 1, line 67 - column 2, line 5).

Response to Arguments

4. Applicant's arguments filed February 13, 2006 are considered. The Examiner agrees with Applicant's dictionary definition of "aperture". See above. The Examiner's new grounds of rejection are set forth above.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

2/27/06